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THE

INSTITUTE OF CHEMISTRY

OF

GREAT BRITAIN AND IRELAND.

FOUNDED, 1877. INCORPORATED BY ROYAL CHARTER, 1885.

Regulations for the Admission of Students, Associates, and Fellows.

(REVISED, JULY, 1917.)

1917

30, RUSSELL SQUARE, LONDON, W.C. 1.

LIST OF OFFICERS AND COUNCIL

For the Year ending March 1st, 1918.

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THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

FOUNDED OCTOBER, 1877.

INCORPORATED BY ROYAL CHARTER OF THE 13th DAY OF JUNE, 1885.

Regulations for the Admission of Students, Associates, and Fellows.

Issued by Order of the Council,

RICHARD B. PILCHER,

Registrar and Secretary.

July, 1917.

All communications with reference to the Regulations should be addressed to

THE REGISTRAR OF THE INSTITUTE OF CHEMISTRY

30, Russell Square, London, W.C. 1.

Office Hours: 10 a.m. to 4 p.m.; Saturdays, 10 a.m. to 1 p.m.

Telephone: MUSEUM, **2406.**

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THE INSTITUTE OF CHEMISTRY.

THE Institute of Chemistry was founded in October, 1877, and incorporated by Royal Charter in June, 1885, for the reasons and for the objects specified in the following abstracts from the Petition :—

"That the Profession of Analytical and Consulting Chemistry is one of great importance to the public, and having regard to the rapidly increasing application of Chemistry to legal investigations, to public health, to the adulteration of food, to Agriculture, and to the Arts and Manufactures, it is desirable that persons practising the Profession of Analytical and Consulting Chemistry should have both a practical and scientific knowledge thereof.

"That it is a matter of increasing importance to Government Departments, Corporate bodies and others requiring the assistance of persons competent to practise in analytical Chemistry and to advise in technological Chemistry that such persons should be properly trained and that their qualifications should be attested by Certificates of competency granted by a scientific body possessing sufficient status and that at present there is no Institution or Corporate body which has power to issue such Certificates."

* * *

"That the said Institute was not established for the purposes of gain nor do the members thereof derive or seek any pecuniary profits from their membership but the

Society aims at the elevation of the profession of Consulting and Analytical chemistry and the promotion of the efficiency and usefulness of persons practising the same by compelling the observance of strict rules of membership and by setting up a high standard of scientific and practical proficiency."

* * *

"That in the judgment of the Petitioners it would greatly promote the objects for which the said Institute has been instituted and would also be for the public benefit if the members thereof were incorporated by Royal Charter with power to afford facilities for the better education and examination of persons desirous of qualifying themselves to be public and technical analysts and chemical advisers on scientific subjects of public importance and with power to grant such certificates of competency as aforesaid as besides other advantages such Incorporation by Charter would be a public recognition of the importance of the Profession of Analytical and Consulting Chemistry and would tend gradually to raise its character and thus to secure for the community the existence of a class of persons well qualified to be employed in the responsible and difficult duties often devolving upon them."

"That with respect to the admission of persons hereafter desirous of becoming members the Petitioners desire and propose that a strict system of examination should be established and that except as in this Our Charter prescribed no person should be qualified to become an Associate of the Institute until he has attained the age of twenty-one years and unless he has passed through a course of three years study of Theoretical and Analytical

Chemistry Physics and Elementary Mathematics and has passed such Examinations in the subjects last mentioned as shall be satisfactory to the Council."

"That, except as by the Charter provided no person other than an Associate shall be eligible to become a Fellow of the Institute and that except as aforesaid all persons desiring to become Fellows shall satisfy the Council that they have for the period of three years since their election as Associates been continuously engaged in the study and practical work of Applied Chemistry in a manner satisfactory to the Council."

"That the Petitioners believe that such a system would have an educational effect of a highly beneficial kind."

"That the Petitioners further desire and propose that the Institute should lay down such rules respecting admission to membership and exclusion therefrom as would advance the attainments, character and status of Members of the Institute and promote their efficiency and usefulness."

"That the Petitioners further desire that the Council should be empowered to grant certificates of competency to members thereof and that the Fellows and Associates should be authorised to annex to their names distinctive letters indicative of their status as Fellows or Associates of the Institute."

In pursuance of the provisions of the Charter and Bye-Laws, the Council have made Regulations for the admission of Students, Associates and Fellows.

SUMMARY OF THE REGULATIONS.

THE STUDENTSHIP.

Annual Registration Fee, 5*s*.

Every Candidate * for admission to the Studentship is required to produce evidence that he is upwards of 17 years of age, and that he has passed a Preliminary Examination in subjects of general education, approved by the Council of the Institute (see p. 8). He must also show that, at the time of making application for registration, he is working at an institution recognised by the Council, or under the direction of a Fellow of the Institute, in a laboratory or works approved by the Council, with the object of qualifying for the practice of professional Chemistry. (See p. 12.)

THE ASSOCIATESHIP (A.I.C.).

Examination Fee, £5 5*s*. *Annual Subscription*, £1 1*s*.

Candidates for the Associateship are required to produce evidence—

(1) Of having passed an approved preliminary examination (see p. 8);

(2) Of having complied with the conditions with regard to technical training and experience, in accordance with the Regulations (see pp. 15—23), except in the cases provided for on p. 14; and

(3) Of having passed an Examination for the Associateship conducted by the Institute (see p. 27), except in cases provided for on p. 17.

DATES OF EXAMINATIONS.

Examinations are held each year in January, April and July, except the Examination in Biological Chemistry, Bacteriology, etc., which is held in October.

* Women are admitted to the Studentship, Associateship and Fellowship of the Institute.

THE FELLOWSHIP (F.I.C.).

Entrance Fee, £5 5s. *Annual Subscription*, £1 1s.

For admission to the Fellowship, an Associate is required to have been registered for three years, and to have been continuously engaged during that period in the study and practice of Chemistry in a manner satisfactory to the Council (see p. 32).

ADDITIONAL EXAMINATIONS.

Fee, £5 5s. *in each case.*

Fellows and Associates are admitted to Examinations for Certificates in (i.) the Chemistry of Food and Drugs, etc. (see pp. 28—29 and 35), (ii.) Biological Chemistry, etc. (see pp. 30 and 33), (iii.) Chemical Technology (see p. 38), (iv.) Metallurgical Chemistry, or any other Branch mentioned on pp. 27—31.

FEES.

A complete list of fees, subscriptions, etc., is given on p. 40.

DIPLOMAS.

Under the provisions of the Royal Charter, any Fellow of the Institute is entitled to use the initials F.I.C., and any Associate of the Institute, the initials A.I.C.

APPOINTMENTS REGISTER.

A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute (see p. 45).

THE REGULATIONS.

1.—PRELIMINARY EXAMINATION IN SUBJECTS OF GENERAL EDUCATION.

All Candidates for the Associateship, except such as are graduates of Universities recognised by the Council of the Institute, must pass an approved Preliminary Examination (see pp. 9—11) before they can be registered as Students or admitted to the Examination held by the Institute.

COMPULSORY SUBJECTS.

Candidates are required to produce the certificate of having passed the Examination, which must include the following subjects :—

(*a*) English Language.

(*b*) Elementary Mathematics, comprising Arithmetic, Algebra, and Geometry.

(*c*) At least one of the following* :—Greek, Latin, French, German, Italian, Russian, Spanish, any other language approved by the Council,

and, if not more than one language be taken under (*c*), the Candidate must also pass in

(*d*) One of the following :—Higher Mathematics, English History, Geography, Botany, Chemistry, Physics, Mechanics, Zoology, Geology.

The standard of attainment in each subject is regulated by the Examining Body. Where the certificate does not mention the subjects in which the Candidate has passed, a statement, giving this information, must be obtained from the Examining Body.

* NOTE.—In the Examination for the Associateship Candidates are required to translate technical literature from French and from one other foreign language, accepted by the Council, into English, with the aid of Dictionaries, to the satisfaction of the Examiners.

Application for information concerning the Regulations of the following Examinations should be made to the respective Examining Bodies.

APPROVED PRELIMINARY EXAMINATIONS.

Every Candidate should produce a certificate of having passed in the compulsory subjects at *one* Examination, but where a Candidate can produce satisfactory evidence that he has passed in the compulsory subjects in *two* Examinations—and not more than *two*—the Council may, if they think fit, exempt him from passing a further Preliminary Examination.

Universities in Great Britain and Ireland.

University of Aberdeen.—Senior Local Examination. Preliminary Examinations for Graduation in Arts or Science.†

Queen's University, Belfast.—Matriculation Examination.

University of Birmingham.—Matriculation Examination. Senior School Leaving Certificate.

University of Bristol.—Matriculation Examination.

University of Cambridge.—Senior or Higher Local Examination. Previous Examination. General Examination.

University of Dublin (Trinity College).—Public Entrance Examination. Examination for the First, Second, Third, or Fourth Year in Arts.

University of Durham.—Matriculation Examination of the Faculty of Science.

University of Edinburgh.—Preliminary Examinations for Graduation in Arts or Science.†

University of Glasgow.—Preliminary Examinations for Graduation in Arts or Science.†

University of Leeds.—Matriculation Examination.*

† Preliminary Examination of the Joint Board of Examiners of the Scottish Universities for Graduation in Arts or Science.

* Matriculation Examination conducted by the Joint Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield.

Note.—In some cases a Junior or Lower Grade Examination, conducted by a recognised examining body, may be accepted, if passed in all of the compulsory subjects at one and the same Examination, *prior to 31st December*, 1901.

APPROVED PRELIMINARY EXAMINATIONS.

Universities in Great Britain and Ireland—*continued.*

University of Liverpool.—Matriculation Examination.*

University of London.—Matriculation Examination. General School Examination.

Victoria University of Manchester.—Matriculation Examination.* Senior School Certificate.

University of Oxford.—Senior or Higher Local Examinations. Responsions. Moderations.

National University of Ireland.—Matriculation Examination.

University of St. Andrews.—Preliminary Examinations for Graduation in Arts or Science.† Final Examination for the Diploma of L.L.A.

University of Sheffield.—Matriculation Examination.*

University of Wales.—Matriculation Examination.

Other Educational Bodies.

College of Preceptors.—Examination for a First Class (or Senior Certificate. Professional Preliminary Examination.

Royal Technical College, Glasgow.—Preliminary Examination for Diploma Students, passed prior to the affiliation of the College to the University.

Intermediate Education Board of Ireland.—Senior Grade Examination.

Municipal School of Technology, Manchester.—Entrance Examination.

Oxford and Cambridge Schools Examinations Board.—Higher Certificate. School Leaving Certificate.

Scotch Education Department.—Examinations for Leaving Certificate in all compulsory subjects on the Higher or Honours Standard.

Central Welsh Board.—Senior Certificate Examination.

Australasia.

Adelaide University.—Senior Public Examination. First Year Examination in Arts.

Melbourne University.—Matriculation Examination.

Sydney University.—Matriculation Examination. First Year Examination in Arts. Senior Public Examination.

Tasmania University.—Senior Public Examination.

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* Matriculation Examination conducted by the Joint Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield.

† Preliminary Examination of the Joint Board of Examiners of the Scottish Universities for Graduation in Arts or Science.

APPROVED PRELIMINARY EXAMINATIONS.

Canada.

Kingston: Queen's University.—Departmental Arts Matriculation Examination.

Manitoba University.—Matriculation Examination.

Montreal: McGill University.—Matriculation Examination.

New Brunswick: University of New Brunswick, Fredericton.—Matriculation Examination.

Nova Scotia: Dalhousie College and University, Halifax.—Matriculation Examination.

Ontario: Universities and Colleges of the Province.—Departmental Arts Matriculation Examination, conducted under the direction of the Provincial Education Department.

Cape Colony.

Cape of Good Hope University.—Matriculation Examination.

Egypt.

The Secondary Education Certificate of the Egyptian Government.

India and Ceylon.

Allahabad University.—Intermediate Examination in Arts.

Bombay University.—Matriculation Examination.

Calcutta University.—First Examination in Arts.

Ceylon Medical College.—Preliminary Examination.

Madras University.—First Examination in Arts.

Punjab University.—Intermediate Examination in Arts.

(In the case of natives of India a classic oriental language may be accepted instead of any language included under (*c*) on p. 8.)

Malta.

University of Malta.—Matriculation Examination.

New Zealand.

New Zealand University.—Preliminary Examination.

Otago University.—Preliminary Examination.

Foreign Universities in Europe.

Examinations entitling candidates to proceed to the French Diplomas of Bachelier ès Lettres and Bachelier ès Sciences; other corresponding Entrance Examinations to the Universities, approved by the Council.

2.—REGULATIONS FOR THE ADMISSION OF STUDENTS.

1. **A Candidate is eligible for registration as a Student, at any period during his training, provided that he can produce evidence satisfactory to the Council—**

(*a*) That he is not less than 17 years of age.

(*b*) That he has passed an approved Preliminary Examination in the required subjects (see pp. 8—11).

(*c*) That he is, at the time of application, a student at one of the universities, colleges, or schools, recognised by the Council (pp. 42—44), or a pupil of a Fellow of the Institute in a laboratory or works approved by the Council, and that he is *bonâ fide* in course of preparation and training with the object of qualifying for the practice of professional, consulting, technological, or analytical Chemistry.

(*d*) That he has paid his registration fee of Five Shillings.

2. The registration fee is due on admission, and on the first day of January in each year. Any Student who omits to pay his annual registration fee, when due, shall on a resolution to that effect being passed by the Council, have his name removed from the Register.

3. Although not compulsory, it is advantageous for Candidates to register as Students. Registered Students are required to comply with the regulations, relating to training and examination for the Associateship, which are in

force at the time of their registration. Candidates not so registered are required to comply with the regulations in operation at the time of their applications for admission to the Examination.

4. Registered Students receive the "Proceedings" (containing the Reports of the Examinations with the pass lists, examination papers and particulars of the practical exercises set), Lectures, and such other publications as the Council may direct; but publications, after 1st March in any year, will not be issued to any Student whose Registration Fee has not then been paid. Registered Students are admitted to Lectures and are admitted to the Library of the Institute during the same hours as Fellows and Associates.

Forms of application can be obtained from the Registrar.

OBLIGATORY CONDITIONS AS TO TRAINING.

Except in the case of Candidates referred to under Sections (*c*), (*d*), and (*e*), on pp. 16—17, and in the following paragraph, the Council will not accept any course of lectures or other instruction in the required subjects as part of the curriculum for the Associateship which is not given *in the daytime* by the appointed teachers, in a university, college or school recognised by the Council (pp. 42—44), or, in the case of laboratory work, by duly appointed assistants; and attendance upon such courses of instruction will not be sufficient, unless satisfactory evidence is afforded by the Candidate that the whole of his time has been given to them, either in a recognised college, or in the case of a pupil of a Fellow of the Institute—(see (*b*), (*c*) and (*d*), on p. 16)—partly in a recognised institution and partly under the direction of such Fellow.

The Council, however, will consider applications for admission to the Examination for the Associateship from candidates of twenty-seven years of age or over whose qualifications are not in accordance with the Regulations, provided they have passed an approved Preliminary Examination in accordance with the Regulations (see p. 8); that they have received systematic instruction, by day or evening classes, in the prescribed subjects, and have passed the class examinations therein; that they have been engaged in the study and practice of chemistry for at least ten years, and provided that their cases are recommended, for special consideration, by at least three Fellows of the Institute.

ADVICE AS TO TRAINING.

Chemistry theoretical and practical, is to be regarded as the principal subject; the other subjects are subsidiary, and should occupy a relatively small proportion, as a rule not more than one-fourth, of the student's time.

The attention of Candidates is directed to the importance of keeping complete records of their practical work. When presenting themselves for examination, they are expected to submit the actual note-books, containing the records made at the time, of practical work of an advanced character, for inspection by the Examiners, who will take them into account in deciding the results of the Examination.

A careful inspection of the syllabus of the Examination held by the Institute will give the Candidate a good general idea of the extent of the knowledge of Chemistry he is expected to possess. In addition to systematic analytical practice, every Candidate should be able to use

the microscope, spectroscope, polarimeter, refractometer, and other instruments commonly employed in chemical laboratories. He should also be able to draw diagrams of apparatus and of instruments. Candidates are expected to be able to use logarithms in their chemical calculations.

Students who are preparing for the Examination for the Associateship should, as far as their opportunities allow, endeavour to keep in touch with modern developments, especially in the branch of work which they intend to select in the examination, and should take advantage of any opportunity which may be offered them for gaining an insight into the practical applications of their science. Candidates whose aim is to practise in technological Chemistry are advised to devote particular attention to the study of Physics and Mechanics.

3.—TRAINING AND QUALIFICATIONS REQUIRED FOR THE ASSOCIATESHIP.

Every Candidate for admission to the Examination for the Associateship (except such as are provided for on p. 14) is required to produce—

1. A certificate of birth or baptism as evidence of age.

A Candidate under 21 years of age, who has complied with the Regulations, may enter for the Examination, and, if successful, will be elected to the Associateship on attaining that age.

2. A satisfactory certificate of moral character.

3. A certificate that he has passed an approved Preliminary Examination (see p. 8).

4. Evidence that he has complied with the conditions set forth in any one of the Sections (*a*) to (*e*) following:—

(*a*) That he has completed a four years' systematic day training in the prescribed subjects—including Chemistry (see p. 18), Physics (see p. 19), Mathematics (see p. 19) and one optional subject (see p. 19)—at a University or College recognised by the Council (see p. 42), and has passed the class examinations in the said subjects—see Note (i.) below; or

(*b*) That he has completed three years' systematic day training as above and passed the class examinations, and has had two other years' approved experience * under a Fellow of the Institute, or in a laboratory or works approved by the Council—see Note (i.) below; or

(*c*) That he has obtained a degree, including Chemistry in the degree Examination, taken otherwise than in accordance with (*d*) and (*e*) below, at a recognised University and (i.) has taken a further year's training in Chemistry at a recognised University or College, or (ii.) has had two other years' approved experience * under a Fellow of the Institute, or in a laboratory or works approved by the Council—see Notes (i.) and (ii.) below; or

(*d*) That he has obtained a degree with first or second class honours in Chemistry or other diploma recognised by the Council as equivalent (see p. 24), after a three years' systematic day course, and (i.) has taken a further year's training in Chemistry at a recognised University or College or (ii.) has had two other years'

* One year may be accepted by the Council as sufficient where the approved experience in a laboratory or works has been acquired *subsequently* to the prescribed training in a recognised University or College.

approved experience * under a Fellow of the Institute, or in a laboratory or works approved by the Council —see Note (ii.) below ; or

(*e*) That he has obtained a degree with first or second class honours in Chemistry or other degree or diploma recognised by the Council as equivalent (see p. 24), after a four years' systematic day course—see Note (ii.), below ;

provided in every case that the Candidate has produced satisfactory evidence of training in Physics, Mathematics, and an optional subject.

Note (i.) Every Candidate admitted under the conditions specified in (*a*), (*b*) or (*c*) above—except such as are provided for in note (ii.) below—will be examined in a branch of the Examination for the Associateship to be selected by himself (see p. 27), including a paper of questions relating to the branch selected, and will be examined orally in General Theoretical Chemistry.

Note (ii.) Any Candidate admitted under (*c*) who has taken a degree with first or second class honours in Chemistry in a recognised University and any Candidate admitted under the conditions specified in (*d*) or (*e*) will be examined in a branch of the Examination for the Associateship to be selected by himself (see p. 27), but will be exempted from the oral examination in General Theoretical Chemistry and from the written part of the Examination for the Associateship, provided that the degree Examination included a Theoretical Examination in the branch selected.

In exceptional cases a Candidate may be elected to the Associateship without examination by the Institute.

* See note on p. 16.

SYLLABUS OF SUBJECTS.

CHEMISTRY: The course of study must be taken at a recognised University or College and include **theoretical and practical inorganic, organic and physical Chemistry**, the practical work occupying, on the average, at least 15 hours per week, during the prescribed period.

The course in Theoretical Chemistry should cover—

The fundamental laws of chemistry; the methods of preparation and properties of the more important elements and of their compounds, both inorganic and organic; the principles of chemical classification; and the current theories of chemical science.

Practical work should cover—

Qualitative and quantitative analysis: such as the analysis of artificial mixtures of moderate complexity, of alloys, and of ores and minerals, and the detection of specified substances present in minute quantities, as impurities or otherwise, in commercial products; the gravimetric and volumetric estimation of commonly occurring substances.

Preparation and purification of definite chemical substances.

Organic analysis, including the recognition and determination of the elements and of typical groups and radicles.

Gas analysis.

The determination of the chief physical constants, such as boiling point, melting point, density, solubility, molecular weight, electrical conductivity, etc.

The use of physical instruments employed by chemists, including spectroscope, microscope, calorimeter, polarimeter, refractometer, and electrical apparatus.

Before proceeding to the Examination for the Associateship, the Candidate will need to obtain systematic training and experience in the branch selected. See pp. 27—31.

PHYSICS: At least 100 hours' practical work in the physical laboratory, and attendance at not less than 50 lectures on **Physics**; or the Candidate must produce evidence that he has passed an approved University Intermediate Science Examination in Physics and has attended systematic courses in theoretical and practical Physical Chemistry equivalent to University B.Sc. Degree standard.

MATHEMATICS: Lectures on **elementary Mathematics**, including Geometry (Euclid, Books I., II., and III., or the equivalent); Algebra to quadratic equations, ratio and proportion; Plane Trigonometry to solution of triangles, heights and distances, area of a triangle, and use of logarithms.

A certificate of having satisfactorily passed an approved examination in Mathematics covering the work indicated above will be accepted by the Council in lieu of evidence of a course in this subject having been taken.

OPTIONAL SUBJECTS: A course of instruction in one subject covering the syllabus indicated below:—

(i.) HIGHER PHYSICS:—Lectures and practical laboratory work as required by Candidates taking Physics in the Final or Degree Examination for B.Sc. in a recognised University.

(ii.) MATHEMATICS:—Algebra, including partial fractions binomial theorem for any rational index and exponential and logarithmic series. Trigonometry: De Moivre's theorem and the sine and cosine series. Differential and Integral Calculus treated in an elementary manner, and involving those functions only which occur in such simple physical problems as those relating to rates, correspondence of errors, maxima and minima areas, volumes, centres of gravity, moments of inertia. Geometry: the subject-matter of Euclid, Books VI.,

XI.; and the simpler properties of the conic sections treated algebraically.

(*Any Candidate who has taken Higher Mathematics in his Preliminary Examination must take some other optional subject in his training for the Associateship.*)

(iii.) ELEMENTARY MECHANICS, STEAM AND GENERAL CHEMICAL ENGINEERING :—Properties of constructive materials—timber, iron, steel, masonry. Principles of construction of boilers, steam engines, internal combustion engines, water-wheels, turbines, pumping engines and pumps. Dynamo machines, and secondary batteries. Furnaces. (40 to 50 lectures, or an equivalent amount of instruction.)

(iv.) METALLURGY* :—Furnace materials and construction : Fuel (solid, liquid and gaseous), calorimetry, pyrometry. Preparation of ores and materials for metallurgical treatment. Production and properties of iron and steel. Production and properties of any two of the following metals: copper, silver, gold, lead, zinc, tin, aluminium. Practical work on the assay and analysis of the chief ores and products. (40 to 50 lectures, or an equivalent amount of instruction.)

(v.) GEOLOGY AND MINERALOGY :—About 40 to 50 lectures or an equivalent amount of other instruction, in addition to sufficient field or laboratory work once a week for a year, on general physical and stratigraphical geology, mineralogy, petrography and economic geology, with special reference to coal-fields, ore deposits, water supply, and drainage.

* A Candidate who selects Branch (*b*) : Metallurgical Chemistry, in the Examination for the Associateship must select some other optional subject.

(vi.) ELEMENTARY PHYSIOLOGY :—General biology of plants and animals, illustrated by reference to the structure and life history of selected types. Histology of simple tissues. Composition and digestion of food. Circulation of the blood, respiration, secretion and excretion, animal heat. The functions of the nervous system. (40 to 50 lectures or an equivalent amount of instruction, in addition to practical work on the qualitative and quantitative examination of blood, urine, bile, and milk.)

(vii.) BACTERIOLOGY :—The use of the microscope. The morphology and physiology of micro-organisms. (40 to 50 lectures, or an equivalent amount of instruction, in addition to practical work, including the recognition of microscopic specimens, with systematic instruction and practice in the preparation, staining, mounting and drawing of specimens, as well as the preparation and study of pure cultures.)

(viii.) AGRICULTURE :—The origin, classification, and composition of agricultural soils—the supply of plant food by soil—chemical and physical properties of soils. Improvement of soil by tillage, draining, manuring and other operations. Chemical and bacterial changes going on in the soil. The constituents of plants—the sources of plant food and assimilation of the same. Rotations and the theories underlying them. The principles of manuring—manures in ordinary use—their origin, composition, uses and analysis. The principal farm crops—composition, requirements, and general characteristics. The foods of the farm—their composition and principal

uses—the functions of food constituents—unexhausted manurial value of foods consumed. Milk and other dairy produce—fermentation in relation thereto. Water and water supply. Industries of the farm—special classes of farming.

(ix.) ELEMENTARY BOTANY:—General morphology and anatomy of plants. The structure of the vegetable cell. The cell-wall and its modifications. Tissues and tissue systems, with especial reference to the characteristic cell-forms present. Elementary histology of the vegetative members of flowering plants. Elementary physiology of plants, including the sources of plant food. Salient features in the structure and life-history of Bacterium, Spirogyra, Saccharomyces, and Mucor. The essential distinctions between Thallophyta, Bryophyta, Pteridophyta, and Phanerogamia; between Gymnospermæ and Angiospermæ; and between Dicotyledones and Monocotyledones.

The course should occupy about 20 to 30 lectures, or an equivalent amount of other instruction, in addition to practical work, including the use of the microscope:

The Student should attain a general elementary knowledge of the optics of the microscope. The Microscope Stand. The use, construction and adjustment of its various parts. The objective. Explanation of the terms *Dry* and *Immersion; Achromatic* and *Apochromatic; Angular* and *Numerical* Aperture. Aplanatic aperture. Critical illumination. The testing of objectives, including the measurement of numerical aperture. The substage condenser, its adjustment and use. The various methods of illuminating the object. The measurement of microscopic objects. The Camera Lucida. The Polariscope and the Microspectroscope. Examination of cell contents. Detection of Starch Mucilage, Inulin, Calcium oxalate, Oil, Aleurone grains. Recognition of the various cell forms; Cellulose, lignified and suberised cell walls. Separation of the tissues and elements. Preparation, staining, mounting, describing and sketching (with or without the aid of the Camera

Lucida) of sections, tissues and elements characteristic of woods, stems, leaves, barks, seeds, fruits, rhizomes, and roots. Examination of those foods and drugs having an organised structure, which are commonly sold in powdered form and the detection of commonly occurring adulterants by comparison with authentic specimens. Examination of the sediments from water and from urine. Identification of the commoner commercial fibres.

N.B.—Candidates taking Branch (*e*), The Chemistry of Food and Drugs, etc., in the Examination for the Associateship, are required to take a course of instruction in Elementary Botany [as (ix.) above].

(x.) ELEMENTARY BIOLOGY:—Elementary morphology, and anatomy of plants. The structure of the vegetable cell. Tissues and tissue systems. Elementary physiology of nutrition. Elementary histology of the root, stem and leaf of a typical Dicotyledon. Salient features in the structure and life-history of Bacterium, Spirogyra, Saccharomyces, and Mucor. The essential distinctions between Thallophyta, Bryophyta, Pteridophyta, and Phanerogamia. The structure of the animal cell. The characteristics and functions of the chief tissues (epithelium, connective tissue, cartilage, bone, blood, muscle, nerve). The differences between plants and animals. Animal nutrition. The essential distinctions between Protozoa and Metazoa. Salient features in the structure and life-history of Amœba, Paramœcium, and Vorticella and in the structure of Lumbricus, Scyllium and Rana. (About 40 to 50 lectures, or an equivalent amount of other instruction, in addition to practical work, including the ordinary methods of staining and mounting for microscopical examination, and the identification of the chief vegetable and animal tissues.)

N.B.—Candidates taking Branch (*f*), Biological Chemistry, Bacteriology, etc., in the Examination for the Associateship, are required to take a course in Elementary Biology [as (x.) above].

4.—EXAMINATIONS RECOGNISED UNDER SECTIONS (*d*) AND (*e*) (p. 16).

In exceptional cases holders of qualifications not included in the following list may apply to the Council for special consideration. An application from a Candidate who has passed an examination for a specialised Degree, such as B.Sc. Tech., B.Sc. in Tinctorial Chemistry, B.Met., etc., will be decided on its merits.

ABERDEEN: The University.

The Final Examination for the Degree of B.Sc., with special distinction in Chemistry.*

BELFAST: Queen's University.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

BIRMINGHAM: The University.

The Final Examination for the Degree of B.Sc. in which Chemistry has been taken as the principal subject, and provided that the Candidate's name has been placed either in the Honours or in the First Division of Chemistry.

BRISTOL: The University.

The Final Examination for the Degree of B.Sc. with First or Second Class Honours in Chemistry.

CAMBRIDGE: The University.

A First or Second Class in Part II. of the Natural Sciences Tripos, with Chemistry as the principal subject.†

DUBLIN: The University (Trinity College).

The Senior Moderatorship in Experimental Science.

The National University of Ireland (1880—1909).

The Final Examination for the Degree of B.A., with the Final Examination for B.Sc. or M.A. (involving inorganic and organic Chemistry).

Royal College of Science for Ireland.‡

The Examination for the Associateship of the Royal College of Science for Ireland, in the Faculty of Manufactures, passed prior to 1st October, 1902, together with a certificate from the Professor of Chemistry in the R.C.Sc., Dublin, or in some other university or college recognised by the Institute, that the Candidate has spent an additional period of six months exclusively in the chemical laboratory of such college.

The Examination for the Associateship of the Royal College of Science for Ireland, in the Faculty of Applied Chemistry, together with evidence that the Candidate has passed an approved Preliminary Examination (pp. 8—11).

* As Honours Degrees in Science are not conferred in the Scottish universities, candidates may submit their cases for special consideration.

† A lower Class in Honours may be accepted if the Candidate passed the examination prior to 1st October, 1902.

‡ See note ‡ on p. 25.

DURHAM: The University.

The Final Examination for the Degree of B.Sc. in the subjects of Chemistry and Physics, with distinction in Chemistry as chief subject, including theoretical and practical inorganic and organic Chemistry.

EDINBURGH: The University.

The Final Examination for the Degree of B.Sc., with special distinction in Chemistry.*

GLASGOW: The University.

The Final Examination for the Degree of B.Sc., with special distinction in Chemistry.*

LEEDS: The University.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

LIVERPOOL: The University.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

The Examination (theoretical and practical) for the Degree of M.Sc. in Chemistry.

LONDON: The University.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.†

City and Guilds (Engineering) College.‡

The Examination for the Associateship of the City and Guilds of London Institute, in the Division of Chemistry, together with evidence that the Candidate has passed an approved Preliminary Examination (pp. 8—11).

The Examination for the Associateship of the City and Guilds of London Institute in the Department of Chemistry, if passed prior to 1st October, 1902.

City and Guilds of London Institute: Technical College, Finsbury.

The Examination for the Diploma of the College, open only to Matriculated Students.

Royal College of Science.‡

The Examination for the Associateship of the Royal College of Science, London, in the Division of Chemistry, together with evidence that the Candidate has passed an approved Preliminary Examination (pp. 8—11).

The Examination for the Associateship of the Royal College of Science, London, in the Division of Chemistry, if passed prior to 1st October, 1902.

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* See note * on p. 24.

† See note † on p. 24.

‡ The Regulation requiring Associates of the Royal Colleges of Science (London and Dublin) and Associates of the City and Guilds of London Institute to pass an approved Preliminary Examination, will not be enforced in the cases of those who produce evidence, satisfactory to the Council, that they entered on a systematic course of training in Chemistry at a recognised College prior to 1st July, 1902.

LONDON—*continued.*

ROYAL SCHOOL OF MINES.

Associates of the Royal School of Mines in Metallurgy, who have passed an approved Preliminary Examination, and have, since obtaining the Diploma, been systematically trained in Chemistry, for six months, in the laboratories of an institution recognised by the Council, are accepted as eligible for election to the Associateship of the Institute, on passing an Examination in general theoretical and practical Chemistry. Such Candidates are required to translate technical literature from French and from one other foreign language accepted by the Council into English, with the aid of dictionaries, to the satisfaction of the Examiners; and they are otherwise subject to the General Regulations for the Examination for the Associateship (A.I.C.). Fee £5 5s.

MANCHESTER: THE VICTORIA UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.*

MUNICIPAL SCHOOL OF TECHNOLOGY (Faculty of Technology in the Victoria University).

The Final Examination for the Degree of B.Sc. Tech., the Candidate's name being placed in the Honours Division.

OXFORD: THE UNIVERSITY.

A First or Second Class in the Final Honours School of Natural Science in the subject of Chemistry.*

ST. ANDREWS: THE UNIVERSITY.

The Final Examination for the Degree of B.Sc., with special distinction in Chemistry.†

SHEFFIELD: THE UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

THE UNIVERSITY OF WALES.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.*

ADELAIDE, SOUTH AUSTRALIA: THE UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

MELBOURNE, VICTORIA, AUSTRALIA: THE UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

MONTREAL, CANADA: MCGILL UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

SYDNEY, N.S.W.: THE UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

TORONTO, CANADA: THE UNIVERSITY.

The Final Examination for the Degree of B.Sc., with First or Second Class Honours in Chemistry.

The Final Examination for the Degree of B.A., with First or Second Class Honours in the Graduating Department of Chemistry and Mineralogy.

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* See note † on p. 24. † See note * on p. 24.

5.—THE EXAMINATION FOR THE ASSOCIATESHIP (A.I.C.)

1. On or before the date fixed for the closing of the List for each Examination, every Candidate desirous of presenting himself is required to forward :—

(*a*) The application duly filled in and accompanied by the certificates and evidence indicated on the form supplied for the purpose.

(*b*) The Examination Fee : Five Guineas (£5 5*s*.).

(*c*) Note-books containing the records, made at the time, of practical chemical work of an advanced character, the genuineness of the records to be attested by the Candidate and his professors or teachers, according to the note-book form, which may be obtained on application to the Registrar. The note-books will be submitted to the Examiners, who will take their contents into consideration and will have power to submit the Candidate to a *vivâ voce* examination upon them.

2. The Examination will occupy at least five days, from 10 a.m. to 4.30 or 5.0 p.m. on each day.

3. The Examiners will be at liberty to apply any test which they think desirable, either *vivâ voce*, or by writing, or by experimental work, in order to obtain evidence as to the knowledge of Chemistry possessed by the Candidate.

4. Each Candidate for the Examination is required to show a *thorough* acquaintance with at least one of the following branches, to be selected by himself :—

(*a*) **Mineral Chemistry :** including general inorganic qualitative and quantitative analysis, and the preparation of pure inorganic substances.

(*b*) **Metallurgical Chemistry:** Sampling, analysis and assay of metals, ores, fuel, metallurgical products, and minerals used in metallurgical processes, with reports thereon; analysis of producer, other fuel gases, and furnace gases; calorimetry of fuels; the principles involved in the preparation of alloys; practical knowledge of electrolytic methods, and of the construction and use of electrical furnaces and other apparatus employed in metallurgical investigations. Metallography: preparation of specimens, and recognition, under the microscope, of the characteristic structures of steel and common alloys, and of the typical structural changes produced on them by various forms of thermal and mechanical treatment. Pyrometry: calibration of pyrometers; determination of the temperatures of furnaces and the melting-points of metals and alloys; observation of critical changes in alloys, including steel.

(*c*) **Physical Chemistry:** Candidates are expected to show special theoretical and practical knowledge of the methods, instruments and apparatus employed in physico-chemical processes and investigations.

(*d*) **Organic Chemistry:** the preparation, examination, analysis, and detailed investigation of organic materials generally, including commercial products.

*(*e*) **The Chemistry (including Microscopy) of Food and Drugs, Fertilisers and Feeding Stuffs, Soils, and Water:** including the examination and analysis of any

* Candidates desirous of becoming qualified as Public Analysts should take Branch (*e*). (See also pp. 35—36.)

article within the scope of the Sale of Food and Drugs Acts; Fertilisers and Feeding Stuffs, Soils, and Water; the detection and determination of the active ingredients in crude drugs, pharmacopœial and antiseptic preparations and prescriptions; the application of the principles of toxicological analysis; detection of blood stains; the examination of urine. Candidates are expected to produce duly authenticated note-books containing evidence of systematic instruction and practice in Microscopy. They must be familiar with the microscope and its accessories and other physical apparatus employed, the ground covered being indicated on pp. 22—23. They are given practical work and a written paper in Microscopy. There is also an oral examination in the recognition of chemicals and drugs ordinarily found in commerce. They are required to show a general knowledge of the commoner impurities and falsifications in drugs, their recognition and importance with respect to the pharmacological action and therapeutical value of the drugs, the toxicological effects of chemicals and drugs, and a knowledge of the dangers from poisoning by chemicals used in trade processes. They are also expected to possess a general knowledge of the Acts relating to the Sale of Food and Drugs and the Sale of Poisons, and of the Fertilisers and Feeding Stuffs Act.

Candidates taking Branch (*e*) are required to produce satisfactory evidence of having taken a course in Elementary Botany, as defined on pp. 22—23, and of having passed the Class Examinations.

*(*f*) **Biological Chemistry, Bacteriology, Fermentation and Enzyme Action:** with special reference to the Chemistry and Bacteriology of food stuffs, water supply, and sewage disposal, and the application of Biological Chemistry to industries and manufactures.

Candidates taking Branch (*f*) are required to produce satisfactory evidence of having taken a course in Elementary Biology, as defined on p. 23, and of having passed the Class Examinations.

(*g*) **Chemical Technology.**† — All Candidates will be expected to give evidence of a good general knowledge of chemical technology, comprising: The application of well-known chemical and physical laws to industrial operations; the development, control, and transmission of power and heat; a working knowledge of operations and plant, of which general use is made in chemical industry for the treatment and handling of materials, finished products, waste products and effluents, including a practical acquaintance with fittings and stores; the properties of materials which affect their application to the construction of plant and apparatus in chemical works; some ability in interpreting drawings of plant and in making rough sketches; the calculation of working costs, and a general knowledge of works accounts.

The Candidate will be required to select one important branch of industry, by which his knowledge of the

* Candidates intending to enter for the Examination in Branch (*f*), viz., Biological Chemistry, are recommended to take the course of study mentioned on pp. 34—35.

† See also p. 38.

subjects of the examination may be decided. At least two papers will be set on the general principles of chemical technology and two papers on the selected industry. In the oral part of the examination, the candidate will be required to interpret drawings and/or models of plant and fittings, and to show a general knowledge of the working of plant. The practical work will include technological analyses, the examination of raw materials and of materials and products connected with the selected industry.

Questions which might involve the disclosure of unpublished processes and details of plant in particular works will not be put.

5. Candidates,—except such as are referred to in Note (ii.) on p. 17,—are given a paper of questions, relating to the Branch selected, and an oral examination on their general knowledge of chemistry.

6. Candidates are required to translate technical literature from French and from one other foreign language accepted by the Council into English, with the aid of dictionaries, to the satisfaction of the Examiners.

7. All Candidates must be familiar with the use of such scientific instruments as are commonly employed in chemical laboratories.

8. During the practical examinations, Candidates are at liberty to consult books of reference, except during the examination conducted by the Examiner in Therapeutics, Pharmacology and Microscopy, in Branch (*e*) ; but during the practical examinations in Microscopy the use of books of reference may be allowed, at the discretion of the Examiner.

9. Any Candidate is at liberty to present a thesis or

dissertation upon any chemical subject, or any original investigation, to which he has given special attention, and the Examiners will take it into account in deciding the examination. The thesis must be forwarded not less than fourteen days prior to the first day of the examination, and must be accompanied by evidence as to whether the work has been carried out entirely by the Candidate, or conjointly with his professor, or with another student.

10. The Board of Examiners are empowered to recommend that a candidate who has failed at the Examination shall not be allowed to enter again until a certain period, say, six months or a year, has elapsed.

6.—THE FELLOWSHIP (F.I.C.).

1. Every Associate applying for admission to the Fellowship is required to produce evidence:—

(*a*) That he is not less than 24 years of age;

(*b*) That he has since his admission as an Associate, and for a period of three years therefrom been continuously engaged in the study and practice of Chemistry in a manner that shall be satisfactory to the Council;

and (*c*) (i.) That he has carried out original research of sufficient merit in the opinion of the Council, or

(ii.) that he has devised processes or inventions of sufficient merit in the opinion of the Council, or

(iii.) in special circumstances, that he is possessed of knowledge and ability equivalent, in the opinion of the Council, to having fulfilled the conditions contained under (i.) or (ii.) above.

2. Applications must be made to the Council, and must be accompanied by a recommendation signed by some responsible person, preferably a Fellow of the Institute, confirming the statements made by the Candidate.

3. The Entrance Fee payable on election to the Fellowship is Five Guineas. No name can be transferred from the Associates' to the Fellows' list until this fee has been paid.

4. Only in quite exceptional cases may non-Associates be elected to the Fellowship. Every such Candidate is required to produce evidence of age, and a satisfactory certificate of moral character. He must also give full information as to his general and scientific education and professional career. It rests with the Council to determine in each case whether a Candidate applying for the Fellowship shall be exempted from passing any examination, or shall be required to pass either the Examination for the Associateship or a Special Examination. If examination be imposed, an Examination Fee (£10 10*s*.) must be paid, in addition to the Entrance Fee (£5 5*s*.).

7.—EXAMINATION IN BIOLOGICAL CHEMISTRY, BACTERIOLOGY, FERMENTATION, AND ENZYME ACTION.

In view of the increasing application of biological methods to investigations connected with water supplies and sewage treatment, the Council desire to encourage professional chemists to study Bacteriology and Biological Chemistry.

Accordingly, the Council have resolved that Fellows and Associates of the Institute who wish to obtain a

certificate of competency in this branch of work shall be allowed to take the Examination in Biological Chemistry. (See Branch (*f*) on p. 30.)

While suited to chemists who practise their profession in its relation to the chemistry and bacteriology of water, sewage and effluents, the examination is also suited to those who are interested in the chemistry of Brewing and other industries involving both chemical and biological knowledge.

The fee for this examination is £5 5*s*.

Candidates are required to produce evidence of having taken a course in Elementary Biology as defined on p. 23.

As few courses in Biology at present include any reference to the commoner organisms occurring in water and sewage, Candidates should make their own observations in those departments of biological investigation. Candidates are advised to use every opportunity of becoming practically acquainted with the various technical problems which are dependent for their solution on a knowledge of Biological Chemistry ; to supplement their training by visits to works, such as breweries, dairies, tanneries, sewage works, and water works ; and to study the following subjects :—

1. Elementary biology.

2. The morphology, physiology, and life history of bacteria, yeasts and moulds, in their relation to food, water supply, the treatment of sewage, agriculture, and the fermentation industries. (A *special* study of pathogenic organisms is not demanded, but the Candidate

should acquire a knowledge of such as are of importance in relation to food and water supply.) Practical work should include:—(*a*) general bacteriological methods and preparation of pure cultures; (*b*) microscopy: the staining and mounting of preparations, and the recognition of species; (*c*) changes caused by micro-organisms.

3. Enzymes and their actions.

4. Proteins and their decomposition products.

5. The methods employed in the examination and estimation of the carbohydrates.

6. The chemistry of waters, sewage liquors and effluents.

7. The chemistry of brewing and of other fermentation industries.

8.—QUALIFICATIONS FOR PUBLIC ANALYSTS, UNDER THE SALE OF FOOD AND DRUGS ACTS, AND OFFICIAL AGRICULTURAL ANALYSTS, UNDER THE FERTILISERS AND FEEDING STUFFS ACT.

It is open to any Fellow or Associate of the Institute who can produce evidence satisfactory to the Council that he has been continuously and systematically engaged, for at least one year, in the analysis of food and drugs in the laboratory of a Fellow of the Institute engaged in such practice, to make application for admission to the Examination in the Chemistry of Food and Drugs, Fertilisers and Feeding Stuffs, Soils and Water, provided he can also produce evidence of training in Elementary Botany (as defined on pp. 22—23) and of systematic instruction and practice

in Microscopy. (See Branch (*e*) of the Examination for the Associateship on pp. 28—29.)

The examination in the Chemistry of Food and Drugs is conducted on lines approved by the Local Government Board for England and Wales, and the Local Government Boards for Scotland and Ireland, who accept the Certificate of Fellowship or Associateship of the Institute of Chemistry, together with the certificate granted on passing this examination, as evidence that the holder is qualified for appointment as Public Analyst under the Sale of Food and Drugs Acts, 1875–1907. In considering the question whether appointments made by local authorities to the position of Official Agricultural Analyst, under the Fertilisers and Feeding Stuffs Act, should be approved, it is the practice of the Board of Agriculture and Fisheries to have full regard to the fact that the Analyst appointed is either a Fellow or Associate of the Institute.

The Fee for this examination is Five Guineas (£5 5*s*.).

9.—GENERAL INSTRUCTIONS TO CANDIDATES FOR EXAMINATION.

1. Examinations are held in the Laboratories of the Institute each year in January, April and July, except the Examination in Biological Chemistry, which is held in October. Local Examinations may be held in various centres as and when the Council deem advisable, on application from such centres. The exact dates will be communicated to intending Candidates at least one month prior to the first day of each examination.

2. Forms of application for admission to examination, which may be obtained from the Registrar, must be filled up and forwarded to the office of the Institute, and must be accompanied by the enclosures mentioned in these Regulations and referred to in the forms.

3. No name will be placed on the list of Candidates for examination unless the application and fee of the Candidate have been received at the office of the Institute on or before the date fixed for the closing of the list.

4. Due notice of examination will be given to each Candidate whose application has been accepted by the Council; but no notice will be forwarded to any Candidate who has not presented himself for examination within a period of two years from the date of the acceptance of his application, or from the date of his failure at an examination.

5. The dates of examination will be published in daily newspapers and scientific journals.

6. Candidates who have failed in an examination are not required to fill in new forms of application for subsequent entry.

7. The list of names of successful Candidates will be sent, as soon as copies are available, to every Candidate and to every university, college, or school recognised by the Council, from which any Candidate has proceeded to the examination. It will also be circulated among the leading newspapers of the United Kingdom.

8. Unsuccessful Candidates will be informed of the subjects in which they have failed, as soon as possible after the publication of the pass list.

10.—EXAMINATION IN CHEMICAL TECHNOLOGY.

1. Examinations open to Fellows and Associates are held in the industrial applications of chemistry, and certificates are granted to successful Candidates.

2. Any Fellow or Associate who desires to enter for the Examination in Chemical Technology is required to make application on a form obtained from the Registrar, to forward it to the Institute not less than one month prior to the date fixed for the commencement of the examination, and to mention one important branch of industry by which his knowledge of the subjects of the examination may be tested.

3. The conduct of these Examinations is under the control of a special Examinations Board, appointed annually by the Council.

4. The Board have the power to examine and to appoint additional Examiners as they think fit.

5. The Examinations are conducted in accordance with the scheme given below, and do not extend over more than four days.

6. All Candidates will be expected to give evidence of a good general knowledge of chemical technology.

7. The Examinations will comprise the following :—

(*a*) The application of well-known chemical and physical laws to industrial operations.

(*b*) The development, control, and transmission of power and heat.

(*c*) A working knowledge of operations and plant, of which general use is made in chemical industry for the treatment and handling of materials, finished products, waste products and effluents, including a practical acquaintance with fittings and stores.

(*d*) The properties of materials which affect their application to the construction of plant and apparatus in chemical works.

(*e*) Some ability in interpreting drawings of plant and in making rough sketches.

(*f*) The calculation of working costs, and a general knowledge of works accounts.

8. The written part of the Examinations will include at least two papers on the general principles of Chemical Technology, as indicated in the scheme, and at least two papers on the industry selected by the Candidate.

9. During the oral part of the Examinations, Candidates are required to interpret drawings or models of plant and fittings, to show a general knowledge of the working of plant, and to have a competent knowledge of the methods of technological analysis as practised in the industries they have respectively selected.

10. Questions which might involve the disclosure of unpublished processes and details of plant in particular works will not be put.

Candidates are invited to send in records of original work, to which the Examinations Board will give special

consideration, but not so as to excuse the Candidates from any part of the Examination.

The Examination Fee is Five Guineas (£5 5s.) for each entry.

Except by special permission of the Board, a Candidate who has failed shall not be allowed to enter again for the examination until a year has elapsed.

11.—LIST OF FEES.

No application for the Fellowship, Studentship, or for admission to the examinations, will be considered by the Council unless it be accompanied by the fee payable according to the following schedule. If the application be declined the fee will be returned.

	£	s.	d.
STUDENTSHIP.			
Annual Registration Fee	0	5	0
EXAMINATIONS.			
Examination for the Associateship :			
For each entry	5	5	0
Additional Examinations for Special Certificates	5	5	0
Examination for the Fellowship...	10	10	0
For each subsequent entry	5	5	0

When a Candidate who has signified his intention of presenting himself for an Examination withdraws his name or fails to present himself at the Examination, the fee

paid by him will not be returned, and it will rest with the Council to decide what fee, if any, he shall pay for a subsequent entry.

ANNUAL SUBSCRIPTION.	£	s.	d.
For Fellows and Associates	1	1	0

ENTRANCE FEE TO THE FELLOWSHIP.

For Associates	5	5	0
For Candidates (not previously Associates) elected after Examination or otherwise	5	5	0

LIFE COMPOSITION FEES IN LIEU OF ANNUAL SUBSCRIPTION.

(*a*) Fellows elected prior to the granting of the Charter (June, 1885), have the choice of compounding at £12 12*s*., or at the amount prescribed below according to age ;

(*b*) Fellows elected prior to January 1st, 1890, have the choice of compounding at £14 14*s*., or at the amount prescribed below according to age ;

(*c*) Fellows elected prior to January 1st, 1902, and Fellows who, having been Associates, were elected prior to December 31st, 1905, have the choice of compounding at £16 16*s*., or at the amount prescribed below according to age ;

(*d*) Fellows (not previously Associates) elected after January 1st, 1902, and all Fellows elected after

December 31st, 1905, have the choice of compounding at £21, or at the amount prescribed below according to age ;

Between the ages of	£	s.	d.
50 and 52	12	12	0
52 „ 54	11	11	0
54 „ 56	10	10	0
56 „ 58	9	9	0
58 „ 60	8	8	0
60 „ 62	7	7	0
62 „ 64	6	6	0
64 „ over	5	5	0

*** Cheques and Post Office Orders (payable at the General Post Office) should be drawn to the order of the Institute of Chemistry, and crossed "London County and Westminster Bank a/c The Institute of Chemistry."

12.—LIST OF UNIVERSITIES, COLLEGES AND INSTITUTIONS RECOGNISED FOR THE TRAINING OF CANDIDATES FOR THE EXAMINATION FOR THE ASSOCIATESHIP OF THE INSTITUTE OF CHEMISTRY.

Aberdeen ...	The University.
Aberystwyth ...	The University College of Wales.
Bangor	University College.
Belfast	Queen's University.
Birmingham ...	The University.
„ ...	The Municipal Technical School.
Bristol	Merchant Venturers' Technical College (Faculty of Engineering of the University of Bristol).
„	The University.

Cambridge	... The University.
Cardiff ...	... University College of South Wales and Monmouthshire.
Cork ...	... University College (National University of Ireland).
Dublin ...	... Royal College of Science for Ireland.
,, ...	... Trinity College.
Dundee ...	... University College.
Edinburgh	... The Heriot-Watt College.
,,	... The University.
Galway ...	... University College (National University of Ireland).
Glasgow ...	... The University.
,,	... The Royal Technical College (affiliated to the University of Glasgow).
Leeds ...	... The University.
Liverpool	... The University.
London ..	... *City and Guilds Engineering College.
,, ...	... City and Guilds Institute, Technical College, Finsbury.
,, ...	... East London College.
,, ...	... King's College.
,, ...	... *The Royal College of Science, and the Royal School of Mines.†
,, ...	... ‡School of the Pharmaceutical Society of Great Britain.
,, ...	... University College.
Manchester	... The Victoria University.

* Imperial College of Science and Technology.

† See page 26.

‡ For Chemistry and Botany.

Manchester ...	Municipal School of Technology (Faculty of Technology in the Victoria University).
Newcastle-on-Tyne	Armstrong College.
Nottingham ...	University College.
Oxford	The University.
Sheffield	The University.
St. Andrews ...	The University.

Adelaide, South Australia ...	The University.
Melbourne, Victoria, Australia	The University.
Montreal, Canada	McGill University.
Sydney, N.S.W....	The University.
Toronto, Canada	The University.

Appointments Register.

1. A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. Applications for the services of professional chemists should be forwarded to the Registrar, stating the requirements, which will be circulated among those whose names are on the Appointments Register.

2. Any Fellow or Associate, on payment of the sum of *2s. 6d.* for postal expenses, is entitled to have his name placed on the Appointments Register for a period not exceeding six months, and at the expiration of that time, the Council may authorise his name to be kept on the list for a similar period on payment of a further sum of *2s. 6d.*

3. Any Fellow or Associate desiring to have his name entered on the list is required to fill in a form, to be obtained from the Registrar, giving the following particulars:—Name; address; age; date of admission to the Associateship and Fellowship of the Institute; qualifications; the special branch, if any, which he desires to follow; previous experience and positions held (if any); and the names of references.

4. Any Fellow or Associate whose name is on the list is required to communicate with the Registrar as soon as he receives an appointment, in order that his name may be removed.

5. The existence of the Appointments Register will be made known, from time to time, in the Institute's publications and announcements.

6. Beyond acquainting those whose names are on this Register with the particulars of vacant appointments, neither the Institute nor its officers can take part in, or be held responsible for, any negotiations which may follow.

THE INSTITUTE OF CHEMISTRY.

30, Russell Square, London, W.C. 1.

PUBLICATIONS.

The Register of Fellows, Associates, and Students. *Gratis.*

The Regulations for the Admission of Students, Associates, and Fellows. *Gratis.*

Examination Papers: Annual Sets, *Sixpence each.* (Post free 7*d.*)

A List of Official Chemical Appointments. Fifth Edition. *In Preparation.*

Proceedings, *Four Parts Annually. Each Part, One Shilling.* (Post free 1*s.* 1*d.*)

History of the Institute: 1877-1914. 5*s.* 0*d.*; Special Edition, 15*s.* 0*d.*

LECTURES.

Lectures given under a scheme the aim of which is to indicate to advanced students the scope and object of work actually carried out by professional chemists in various branches of practice.

Cement. Bertram Blount, F.I.C. 2*s.* 6*d.*

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